

REMARKS

By this reply, claims 1-4 have been amended without narrowing their scope; and new claims 8-12 have been added, leaving claims 1-12 pending in the application. The specification has been amended to address several informalities. No new matter has been added by the amendments. Favorable consideration is respectfully requested in view of the following remarks.

Allowable Subject Matter

Applicants gratefully acknowledge that claim 4 has been indicated to contain allowable subject matter. For the reasons stated below, however, Applicants submit that each of the pending claims is patentable.

Objection to Specification

The original Abstract has been replaced with a new Abstract on a separate sheet.

Withdrawal of the objection is respectfully requested.

Objection to the Claims

Claim 1 has been amended to change "the former" to "said at least two force measuring sensors" to address this objection.

Withdrawal of the objection is respectfully requested.

Rejection Under 35 U.S.C. § 102

Claims 1-3 and 5 stand rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,107,985 to Sommer et al. ("Sommer") for the reasons stated at pages 2-3 of the Official Action. The rejection is respectfully traversed.

Claim 1 is directed to a device for force measurement in dynamic tensile experiments on material samples. The claimed device comprises a force measuring cell, in which at least one force measuring sensor is integrated and which is executed one piece with a first connecting structure. The material sample is connectable in a firm, detachable manner via the first connecting structure with the force measuring cell. The force measuring cell is provided with a second connecting structure, which is disposed opposite the first connecting structure and via which the force measuring cell is attachable to a fixed back-rest. In the claimed device, at least two force measuring sensors are disposed on the force measuring cell spaced from the first connecting structure such that the distance between the at least two force measuring sensors and the first connecting structure, and between the at least two force measuring sensors and the tensile sample, is smaller than the distance between the at least two force measuring sensors and the second connecting structure. The force measuring cell is provided with a housing (see the exemplary shown in Fig. 1) or with two pressure plates (see the exemplary embodiment shown in Fig. 4), which has, respectively have, a thinner wall thickness in the region of the force measuring sensors than in the other housing region or other regions of the pressure plates. The force measuring cell has more a stable type of construction regarding elastic deformability in the region of the second connecting structure than in the region of the first connecting structure and the at least two force measuring

sensors. Applicants respectfully submit that Sommer fails to disclose each and every feature recited in claim 1.

Particularly, Sommer discloses a bending beam load cell, which is constructed for receiving bending stress only. Particularly, Sommer's load cell is constructed to stress a rigid beam 28, on which strain gauges 36, 37 are fixed, in bending. See the embodiments shown in Figs. 1 and 2 and in Fig. 3, respectively, of Sommer. Sommer's load cell is fixed on one side by a screw mounting arrangement 16 defining a vertically extending axis 14, which is also the load axis along which the load is applied to the load cell. See column 1, lines 64-67. The load cell is mounted on its other side by threaded mounting holes 18, 19 to a suitable mounting surface. See column 2, lines 4-7.

In contrast to Sommer's bending beam load cell for subjecting a beam to bending stress, the claimed device is for force measurement in dynamic tensile experiments on material samples. In dynamic tensile experiments, the material sample is not exposed to bending forces, but is exposed to a tensile stress acting along an axis (e.g., symmetric axis 7 shown in Fig. 1) along which the material sample (e.g., tensile sample 10 shown in Figs. 3 and 4) is elongated. Accordingly, the claimed device and Sommer's bending beam load cell are constructed to perform different force measurements from each other.

In addition to the above-described differences between the claimed device for force measurement in dynamic tensile experiments and Sommer's bending beam load cell, there are other structural differences between the claimed device and Sommer's load cell. For example, the claimed device comprises a first connecting structure to which the material sample is connectable in a firm and detachable

manner. No such first connecting structure is disclosed in Sommer. Further, in Sommer's bending beam load cell, the material sample, i.e., beam 28, is connected in one piece with the load arm 13 and on the other side with the upright base 12. Also, in Sommer's load cell, the strain gauges 36 and 37 are mounted on the beam 28 at an equal distance from both of the load arm 13 and upright base 12 (i.e., the beam fixing areas of the load cell). As such, Sommer does not disclose the features that "at least two force measuring sensors are disposed on said force measuring cell spaced from said first connecting structure in such a manner that the distance between said at least two force measuring sensors and said first connecting structure, and between said at least two force measuring sensors and the tensile sample, is smaller than the distance between said at least two force measuring sensors and said second connecting structure," as recited in claim 1.

Thus, Sommer fails to anticipate the device recited in claim 1. Claims 2, 3 and 5, which depend from claim 1, are also not anticipated by Sommer for at least the same reasons as those stated with respect to claim 1. Therefore, withdrawal of the rejection is respectfully requested.

Rejection Under 35 U.S.C. § 103

Claim 7 stands rejected under 35 U.S.C. § 103(a) over Sommer in view of U.S. Patent No. 5,508,676 to Grange et al. ("Grange"). The reasons for the rejection are stated on page 4 of the Official Action. The rejection is respectfully traversed.

Claim 7 depends from claim 1. Applicants submit that Grange fails to cure the above-described deficiencies of Sommer with respect to the device recited in claim 1. Referring to Fig. 3 of Grange, Grange discloses a strain gauge on a flexible

support 20 and a transducer equipped with the strain gauge, which has a different structure and which is designed for a different function than the claimed device.

Particularly, Grange's device is constructed such that the probe is exposed to bending forces, but not to a tensile stress, as in the device recited in claim 1.

Accordingly, the combination of Sommer and Grange would not have rendered obvious the device recited in claim 1. Thus, claim 7 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

New Claims

New claims 8-12 depend directly or ultimately from claim 1 and are also patentable.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

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Date: April 10, 2006

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